REMARKS

Claims 1-3, 7-19 and 23-32 are currently pending in the application; with claims 1 and 17 being independent. Claims 1-32 were pending prior to the Office Action. In this Reply, claims 1, 7, 17 and 23 have been amended and claims 4-6 and 20-22 have been canceled.

The Examiner is respectfully requested to reconsider the rejections in view of the amendments and remarks set forth herein. Applicant respectfully requests favorable consideration thereof in light of the amendments and comments contained herein, and earnestly seeks timely allowance of the pending claims.

Claim Rejections – 35 USC §103

The Examiner rejected claims 1-14, 16, 17-30 and 32 under 35 U.S.C. § 103(a) as being unpatentable over US Patent Application 2004/0264780 ("Zhang et al.") in view of publication "Nonlinear Adaptive Control Using Nonparametric Gaussian Process Prior Models" by Roderick M. et al. ("Roderick"). The Examiner rejected claims 15 and 31 under 35 U.S.C. § 103(a) as being unpatentable over Zhang et al., Roderick and further in view of US Patent Application 2002/0122596 ("Bradshaw").

Applicant respectfully traverses these rejections.

Applicant has amended claims 1 and 17.

Applicant has amended claim 1 to incorporate claim 6 and recite "wherein said additive probability model models the objects using a class center and residual components between the objects and the class center, wherein an uncertainty related to the class center is represented by a model associated with the class center, wherein said object of interest is a face and said step of detecting the object of interest detects facial features in said digital image data."

Applicant has amended claim 17 to incorporate claim 22 and recite "wherein said additive probability model models the objects using a class center and residual components between the objects and the class center, wherein an uncertainty related to the class center is represented by a model associated with the class center, and wherein said object of interest is a face and said object detector for detecting an object of interest detects facial features in said digital image data."

To establish a *prima facie* case of obviousness, the Examiner has the burden of meeting the basic criterion that the prior art must teach or suggest all of the claim limitations.

Regarding this basic criterion, the Applicant submits that Zhang et al., Roderick and Bradshaw do not disclose or suggest "applying each extracted feature to a previously-determined additive probability model to determine the likelihood that the object of interest belongs to an existing class of objects, wherein said additive probability model models the objects using a class center and residual components between the objects and the class center, wherein an uncertainty related to the class center is represented by a model associated with the class center, wherein said object of interest is a face and said step of detecting the object of interest detects facial features in said digital image data", as recited in claim 1. Zhang et al., Roderick and Bradshaw also do not disclose or suggest "a likelihood determining unit for applying each extracted feature to a previously-determined additive probability model to determine the likelihood that the object of interest belongs to an existing class of objects, wherein said additive probability model models the objects using a class center and residual components between the objects and the class center, wherein an uncertainty related to the class center is represented by a model associated with the class center, and wherein said object of interest is a face and said object detector for detecting an object of interest detects facial features in said digital image data", as recited in claim 17.

The Examiner alleged that Zhang teaches accessing, detecting, applying, normalizing and extracting steps, and that Roderick teaches an additive probability model as recited in claim 1.

Applicant disagrees with Examiner's assertions.

Roderick discloses nonlinear adaptive control using a non-parametric Gaussian process prior model.

Zhang discloses a probability model which is trained by mapping one or more sets of sample facial features to corresponding names of individuals. A face from an input data set of at least one the digital image is then detected. Facial features are then automatically extracted from the detected face. A similarity measure is them modeled as a posterior probability that the facial features match a particular set of features identified in the probability model. The similarity

measure is statistically learned. A name is then inferred as a function of the similarity measure. The face is then annotated with the name.

In Zhang et al., a set of features is extracted for a new face, and similarity between the new face and another face is measured using these features. Face similarity is calculated as a maximum a posteriori (MAP) estimation (paragraph [0051]). The similarity between two faces is calculated based on a difference ΔF between the face features of the two faces, a likelihood for the feature difference ΔF given a class Ω_I that corresponds to facial feature differences between appearances of a same individual, and a likelihood for the feature difference ΔF given a class Ω_E that corresponds to facial feature variations between different individuals (paragraphs [0055], [0057] and [0058]). Zhang et al. does not use an additive probability model that models objects using a class center and residual components between the objects and the class center. Specifically, class Ω_I merely corresponds to facial feature differences between appearances of a same individual, and class Ω_E merely corresponds to facial feature variations between different individuals. Zhang et al. calculates a similarity measure between two faces based on how large or how small feature differences are between faces of a same individual or faces of different individuals.

Roderick and Zhang are substantially different, as Roderick discloses nonlinear adaptive control using a non-parametric Gaussian process prior model, while Zhang discloses face annotation using facial feature differences between appearances of a same individual and facial feature variations between different individuals.

Neither Zhang nor Roderick discloses how to combine subject detection (face detection) in digital images with the non-parametric Gaussian process of Roderick. Zhang's system for annotating a face in a digital image is substantially different from Roderick's nonlinear adaptive control using a non-parametric Gaussian process prior model.

The Examiner is improperly combining Zhang and Roderick to allegedly show "applying each extracted feature to a previously-determined additive probability model to determine the likelihood that the object of interest belongs to an existing class of objects, wherein said additive probability model models the objects using a class center and residual components between the

objects and the class center, wherein an uncertainty related to the class center is represented by a model associated with the class center wherein said object of interest is a face and said step of detecting the object of interest detects facial features in said digital image data." The system for annotating a face in Zhang and the Gaussian process of Roderick are substantially different and independent applications, and neither Zhang nor Roderick teach or suggest how a Gaussian process of Roderick might be incorporated into the face annotation system of Zhang.

Thus, an artisan would not find any realistic relevance or feasibility of using the Gaussian process of Roderick in the system for annotating a face in Zhang.

Therefore, Applicant asserts that the Examiner has not explained how and why Zhang would use a Gaussian process of Roderick to annotate faces. The Examiner states (page 3 of the Office Action) that Zhang does not disclose an additive probability model as claimed, and that Roderick teaches Gaussian process priors. From these statements, the Examiner somehow concludes that "it would have been obvious to one having ordinary skill in the art to apply the Roderick teaching with the Zhang teaching because such feature improves the performance of nonlinear adaptive controllers". This leap of reasoning is not justified by the teachings of any of the references, because neither Zhang nor Roderick teach or suggest how a Gaussian process of Roderick might be incorporated into the face annotation system of Zhang.

The Examiner must also appreciate that obviousness is not evidenced by showing that disparate features from different references could merely somehow be combined to meet the terms of the claims. What is required is for the Examiner to make the factual inquiries mandated by ***Graham v. John Deere Co.***, 86 S.Ct. 684, 383 U.S. 117, 148 USPQ 459, 469 (1966) and then explain how and why one having ordinary skill in the art would have been led to modify an applied reference and/or to combine applied references to arrive at the claimed invention. ***Uniroyal, Inc. v. Rudkin-Wiley Corp.***, 837 F.2d 1044, 5 USPQ2d 1434 (Fed. Cir. 1988).

The Examiner's explanation in the present Office Action regarding the combination of Zhang and Roderick is merely a generalization. There is no disclosure in Zhang or Roderick how to combine a Gaussian process of Roderick and the face annotation system of Zhang.

Applicant rely upon the decisions by the Court of Appeals for the Federal Circuit in ***Ecolochem Inc. v. Southern California Edison, Co.***, 227 F.3d 1361, 56 USPQ2d 1065 (Fed.

Cir. 2000) and ***In re Kotzab,*** 217 F.3d 1365, 55 USPQ 1313 (Fed. Cir. 2000), where it was held that generalizations do not establish the requisite realistic motivation. Rather, it is incumbent upon the Examiner to make particular findings as to a specific understanding or specific technological principle, and to provide evidence of such findings, to establish the requisite realistic motivational element.

Hence, Applicant concludes that the Examiner's 35 U.S.C. § 103 rejection is based on mere conclusory statements. However, rejections on obviousness cannot be sustained by mere conclusory statements; instead, there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness. *KSR*, 550 U.S. at 82 USPQ2d at 1396 quoting *In re Kahn*, 441 F.3d 977, 988, 78 USPQ2d 1329, 1336 (Fed. Cir. 2006). M.P.E.P. 2143.01. In the Office Action, the Examiner has randomly combined Zhang and Roderick when there is no teaching in any of the references as to how the different mathematical methods of these references might be combined.

Bradshaw merely discloses a technology for semantically classifying areas of an image (and/or the images themselves) as one of a number of multiple discriminating categories. The technology employs one or more hierarchical, probabilistic techniques for performing such classification. The architecture of the technology employs multiple hierarchical layers. The architecture is based on modeling class likelihoods at each of such layers separately and then combining these to form an overall estimate of the posterior, conditioned on the data (Abstract).

Bradshaw does not determine the likelihood that an object of interest belongs to an existing class of objects using a previously-determined additive probability model. An additive probability model is not mentioned anywhere in Bradshaw. Bradshaw also does not disclose or suggest any class center, and does not disclose that an uncertainty related to a class center is represented by a model associated with the class center. Hence, Bradshaw fails to teach or suggest all of the elements for claim 1.

Consequently, Zhang et al., Roderick and Bradshaw fail to establish *prima facie* obviousness of claim 1 or any claim dependent therefrom. Independent claim 17 and claims depending therefrom define over of Zhang et al., Roderick and Bradshaw at least based on reasoning similar to that set forth above.

For all of the above reasons, taken alone or in combination, Applicant respectfully requests reconsideration and withdrawal of the 35 U.S.C. § 103 (a) rejection of claims 1 and 17. Claims 2, 3, 7-16 depend from claim 1 and are allowable at least by virtue of their dependency. Claims 18-19 and 23-32 depend from claim 17 and are allowable at least by virtue of their dependency.

Conclusion

In view of the above amendments and remarks, this application appears to be in condition for allowance and the Examiner is, therefore, requested to reexamine the application and pass the claims to issue.

Should there be any outstanding matters that need to be resolved in the present application, the Examiner is respectfully requested to contact Corina E. Tanasa, Registration No. 64,042, at telephone number (703) 208-4003, located in the Washington, DC area, to conduct an interview in an effort to expedite prosecution in connection with the present application.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional fees required under 37 C.F.R. §§ 1.16 or 1.17; particularly, extension of time fees.

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Respectfully submitted,

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